AMENDMENTS TO THE CLAIMS

The following listing of claims is provided in accordance with 37 C.F.R. § 1.121.

1. (Currently Amended) A method of drilling a well bore in a subterranean formation comprising the steps of:

providing a drilling fluid comprising:

an aqueous-based fluid, and

a shale inhibiting component comprising a polyvinyl pyrrolidone nanoparticle source; and

placing the drilling fluid in the well bore in the subterranean formation.

2. (Canceled).

3. (Currently Amended) The method of claim [[2]] 1 wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

4. (Currently Amended) The method of claim 1 wherein the drilling fluid ~~nanoparticle source~~ comprises rubber latex~~, at least a portion of the rubber latex is in the form of nanoparticles~~.

5. (Original) The method of claim 4 wherein the rubber latex comprises emulsion-polymerized copolymers of 1,3-butadiene and styrene.

6. (Currently Amended) The method of claim 1 wherein the drilling fluid ~~nanoparticle source~~ comprises ~~crosslinked polyvinyl pyrrolidone and~~ emulsion-polymerized copolymers of 1,3-butadiene and styrene, wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

7. (Original) The method of claim 1 wherein the shale inhibiting component is present in the drilling fluid in a concentration sufficient to inhibit the degradation of shale.

8. (Currently Amended) The method of claim 1 wherein the polyvinyl pyrrolidone nanoparticle source is present in the drilling fluid in an amount in the range of from about 0.0025% by volume to about 5% by volume of the drilling fluid.

9. (Currently Amended) The method of claim 1 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 1,000 nanometers.

10. (Currently Amended) The method of claim 1 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 400 nanometers.

11. (Original) The method of claim 1 wherein the drilling fluid further comprises a salt.

12. (Original) The method of claim 11 wherein the salt is present in the drilling fluid an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.

13. (Original) The method of claim 11 wherein the salt comprises potassium chloride, calcium chloride, sodium chloride, potassium formate, calcium chloride, calcium bromide, potassium carbonate, or a mixture thereof.

14. (Original) The method of claim 1 wherein the drilling fluid further comprises antifoams, biocides, bridging agents, corrosion control agents, dispersants, flocculants, fluid loss additives, foamers, H_2S scavengers, lubricants, oxygen scavengers, scale inhibitors, viscosifiers, or weighting agents.

15. (Original) The method of claim 1 wherein the density of the drilling fluid is within the range of from about 7 pounds per gallon to about 22 pounds per gallon.

16. (Original) The method of claim 1 wherein the aqueous-based fluid is fresh water.

17. (Original) The method of claim 1 wherein the shale inhibiting component inhibits the degradation of shale by acting as a flocculant.

18. (Currently Amended) The method of claim 1 wherein the polyvinyl pyrrolidone nanoparticle source is present in the drilling fluid in an amount in the range of from about 0.0025% to about 5% by volume of the drilling fluid; ~~wherein the nanoparticle source comprises polyvinyl pyrrolidone, at least a portion of the polyvinyl pyrrolidone is in the form of nanoparticles;~~ and wherein the drilling fluid further comprises potassium chloride in an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.

19. (Currently Amended) A method of drilling a well bore in a subterranean formation comprising shale comprising the steps of:

providing a drilling fluid comprising an aqueous-based fluid, and a shale inhibiting component comprising a polyvinyl pyrrolidone nanoparticle source; and

drilling the well bore in the subterranean formation using the drilling fluid.

20. (Canceled).

21. (Currently Amended) The method of claim 19 wherein the drilling fluid ~~nanoparticle source~~ comprises rubber latex~~, at least a portion of the rubber latex is in the form of nanoparticles~~.

22. (Original) The method of claim 21 wherein the rubber latex comprises emulsion-polymerized copolymers of 1,3-butadiene and styrene.

23. (Currently Amended) The method of claim 19 wherein the drilling fluid ~~nanoparticle source~~ comprises ~~crosslinked polyvinyl pyrrolidone and~~ emulsion-polymerized

copolymers of 1,3-butadiene and styrene, wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

24. (Original) The method of claim 19 wherein the shale inhibiting component is present in the drilling fluid in a concentration sufficient to inhibit the degradation of shale.

25. (Currently Amended) The method of claim 19 wherein the polyvinyl pyrrolidone nanoparticle source is present in the drilling fluid in an amount in the range of from about 0.0025% by volume to about 5% by volume of the drilling fluid.

26. (Currently Amended) The method of claim 19 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 1,000 nanometers.

27. (Currently Amended) The method of claim 19 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 400 nanometers.

28. (Original) The method of claim 19 wherein the shale inhibiting component inhibits the degradation of shale by acting as a flocculant.

29. (Canceled).

30. (Currently Amended) A method of enhancing the shale inhibition of an aqueous-based drilling fluid comprising the step of adding to the drilling fluid a shale inhibiting component comprising a polyvinyl pyrrolidone nanoparticle source.

31. (Canceled).

32. (Currently Amended) The method of claim [[31]] 30 wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

33. (Original) The method of claim 30 wherein the drilling fluid ~~nanoparticle source~~ comprises rubber latex~~, at least a portion of the rubber latex is in the form of nanoparticles~~.

34. (Original) The method of claim 33 wherein the rubber latex comprises emulsion-polymerized copolymers of 1,3-butadiene and styrene.

35. (Currently Amended) The method of claim 30 wherein the drilling fluid ~~nanoparticle source~~ comprises ~~crosslinked polyvinyl pyrrolidone and~~ emulsion-polymerized copolymers of 1,3-butadiene and styrene, and wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

36. (Original) The method of claim 30 wherein the shale inhibiting component is added to the drilling fluid in an amount sufficient to inhibit the degradation of shale.

37. (Currently Amended) The method of claim 30 wherein the polyvinyl pyrrolidone nanoparticle source is present in the drilling fluid in an amount in the range of from about 0.0025% by volume to about 5% by volume of the drilling fluid.

38. (Currently Amended) The method of claim 30 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 1,000 nanometers.

39. (Currently Amended) The method of claim 30 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 400 nanometers.

40. (Original) The method of claim 30 wherein the shale inhibiting component inhibits the degradation of shale by acting as a flocculant.

41. (Currently Amended) A method of drilling a well bore in a subterranean formation comprising the step of using a drilling fluid that comprises a polyvinyl pyrrolidone nanoparticle source.

42. (Currently Amended) The method of claim 41 wherein the polyvinyl pyrrolidone nanoparticle source inhibits the degradation of shale.

43. (Canceled).

44. (Currently Amended) The method of claim 41 wherein the drilling fluid ~~nanoparticle source~~ comprises rubber latex~~, at least a portion of the rubber latex is in the form of nanoparticles~~.

45-55. (Canceled)

56. (Currently Amended) A drilling fluid comprising an aqueous-based fluid and a shale inhibiting component comprising a polyvinyl pyrrolidone nanoparticle source, wherein the drilling fluid is formulated for use in drilling in a subterranean formation.

57. (Canceled).

58. (Currently Amended) The drilling fluid of claim [[57]] 56 wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

59. (Currently Amended) The drilling fluid of claim 56 wherein the drilling fluid ~~nanoparticle source~~ comprises rubber latex~~, at least a portion of the rubber latex is in the form of nanoparticles~~.

60. (Original) The drilling fluid of claim 59 wherein the rubber latex comprises emulsion-polymerized copolymers of 1,3-butadiene and styrene.

61. (Currently Amended) The drilling fluid of claim 56 wherein the drilling fluid ~~nanoparticle source~~ comprises ~~crosslinked polyvinyl pyrrolidone and~~ emulsion-polymerized copolymers of 1,3-butadiene and styrene, and wherein the polyvinyl pyrrolidone nanoparticle source comprises crosslinked polyvinyl pyrrolidone.

62. (Original) The drilling fluid of claim 56 wherein the shale inhibiting component is present in the drilling fluid in a concentration sufficient to inhibit the degradation of shale.

63. (Currently Amended) The drilling fluid of claim 56 wherein the polyvinyl pyrrolidone nanoparticle source is present in the drilling fluid in an amount in the range of from about 0.0025% to about 5% by volume of the drilling fluid.

64. (Currently Amended) The drilling fluid of claim 56 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 1,000 nanometers.

65. (Currently Amended) The drilling fluid of claim 56 wherein at least a portion of the polyvinyl pyrrolidone nanoparticle source comprises nanoparticles having an average particle size of less than about 400 nanometers.

66. (Original) The drilling fluid of claim 56 further comprising a salt.

67. (Original) The drilling fluid of claim 66 wherein the salt is present in an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.

68. (Original) The drilling fluid of claim 66 wherein the salt comprises potassium chloride, calcium chloride, sodium chloride, calcium bromide, potassium formate, potassium carbonate, or a mixture thereof.

69. (Original) The drilling fluid of claim 56 further comprising antifoams, biocides, bridging agents, corrosion control agents, dispersants, flocculants, fluid loss additives, foamers, H_2S scavengers, lubricants, oxygen scavengers, scale inhibitors, viscosifiers, or weighting agents.

70. (Original) The drilling fluid of claim 56 wherein the density of the drilling fluid is within the range of from about 7 pounds per gallon to about 22 pounds per gallon.

71. (Original) The drilling fluid of claim 56 wherein the aqueous-based fluid is fresh water.

72. (Original) The drilling fluid of claim 56 wherein the shale inhibiting component inhibits the degradation of shale by acting as a flocculant.

73. (Currently Amended) The drilling fluid of claim 56 wherein the polyvinyl pyrrolidone nanoparticle source is present in the drilling fluid in an amount in the range of from about 0.0025% to about 5% by volume of the drilling fluid; ~~wherein the nanoparticle source comprises polyvinyl pyrrolidone, at least a portion of the polyvinyl pyrrolidone is in the form of nanoparticles;~~ and wherein the drilling fluid further comprises potassium chloride in an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.

74-81. (Canceled).

82. (Currently Amended) A drilling fluid for use in subterranean applications comprising a polyvinyl pyrrolidone nanoparticle source, wherein the drilling fluid is formulated for use in drilling in a subterranean formation.

83. (Currently Amended) The drilling fluid of claim 82 wherein the polyvinyl pyrrolidone nanoparticle source inhibits the degradation of shale.

84. (Canceled).

85. (Currently Amended) The drilling fluid of claim 82 wherein the drilling fluid ~~nanoparticle source~~ comprises rubber latex~~, at least a portion of the rubber latex is in the form of nanoparticles~~.

86. (New) A method of drilling in a subterranean formation, comprising using a drilling fluid comprising an aqueous-based fluid and polyvinyl pyrrolidone nanoparticles.

87. (New) The method of claim 86 wherein the drilling fluid comprises rubber latex nanoparticles.

88. (New) The method of claim 87 wherein the rubber latex nanoparticle s comprise emulsion-polymerized copolymers of 1,3-butadiene and styrene.

89. (New) The method of claim 86 wherein the drilling fluid comprises emulsion-polymerized copolymers of 1,3-butadiene and styrene, and wherein the polyvinyl pyrrolidone nanoparticles comprise crosslinked polyvinyl pyrrolidone.

90. (New) The method of claim 86 wherein the polyvinyl pyrrolidone nanoparticles are present in the drilling fluid in an amount in the range of from about 0.0025% by volume to about 5% by volume of the drilling fluid.

91. (New) The method of claim 86 wherein the polyvinyl pyrrolidone nanoparticles have an average particle size of less than about 1,000 nanometers.

92. (New) The method of claim 86 wherein the polyvinyl pyrrolidone nanoparticles have an average particle size of less than about 400 nanometers.

93. (New) The method of claim 86 wherein the polyvinyl pyrrolidone nanoparticles inhibit the degradation of shale by acting as a flocculant.

94. (New) The method of claim 86 wherein the polyvinyl pyrrolidone nanoparticles are present in the drilling fluid in an amount in the range of from about 0.0025% to about 5% by volume of the drilling fluid; and wherein the drilling fluid further comprises potassium chloride in an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.

95. (New) A drilling fluid comprising an aqueous-based fluid; and polyvinyl pyrrolidone nanoparticles, wherein the drilling fluid is formulated for use in drilling in a subterranean formation.

96. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles comprise crosslinked polyvinyl pyrrolidone.

97. (New) The drilling fluid of claim 95 wherein the drilling fluid comprises rubber latex nanoparticles.

98. (New) The drilling fluid of claim 97 wherein the rubber latex nanoparticles comprise emulsion-polymerized copolymers of 1,3-butadiene and styrene.

99. (New) The drilling fluid of claim 95 wherein the drilling fluid comprises emulsion-polymerized copolymers of 1,3-butadiene and styrene, and wherein the polyvinyl pyrrolidone nanoparticles comprise crosslinked polyvinyl pyrrolidone.

100. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles are present in the drilling fluid in a concentration sufficient to inhibit the degradation of shale.

101. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles are present in the drilling fluid in an amount in the range of from about 0.0025% to about 5% by volume of the drilling fluid.

102. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles comprise nanoparticles having an average particle size of less than about 1,000 nanometers.

103. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles comprise nanoparticles having an average particle size of less than about 400 nanometers.

104. (New) The drilling fluid of claim 95 further comprising a salt.

105. (New) The drilling fluid of claim 104 wherein the salt is present in an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.

106. (New) The drilling fluid of claim 104 wherein the salt comprises potassium chloride, calcium chloride, sodium chloride, calcium bromide, potassium formate, potassium carbonate, or a mixture thereof.

107. (New) The drilling fluid of claim 95 further comprising antifoams, biocides, bridging agents, corrosion control agents, dispersants, flocculants, fluid loss additives, foamers, H_2S scavengers, lubricants, oxygen scavengers, scale inhibitors, viscosifiers, or weighting agents.

108. (New) The drilling fluid of claim 95 wherein the density of the drilling fluid is within the range of from about 7 pounds per gallon to about 22 pounds per gallon.

109. (New) The drilling fluid of claim 95 wherein the aqueous-based fluid is fresh water.

110. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles inhibit the degradation of shale by acting as a flocculant.

111. (New) The drilling fluid of claim 95 wherein the polyvinyl pyrrolidone nanoparticles are present in the drilling fluid in an amount in the range of from about 0.0025% to about 5% by volume of the drilling fluid; and wherein the drilling fluid further comprises potassium chloride in an amount in the range of from about 5 pounds per barrel to about the salt saturation limit of the drilling fluid.